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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,135	11/29/2001	Wilfred C. Kittler JR.	1330.65923/DTI 4021	7605

7590 07/14/2004

Thomas R. Juettner
Greer, Burns & Crain, Ltd.
Suite 2500
300 South Wacker Drive
Chicago, IL 60606

EXAMINER

PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,135

Applicant(s)

KITTLER, WILFRED C.

Examiner

Andrew T Piziali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 4,5 and 10-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 6/11/2004 has been entered. In response to the arguments presented, the examiner has reinstated claim 9 as a claim under active prosecution.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,590,622 to Nakanishi.

Regarding claims 1-3 and 6-8, Nakanishi discloses a conductive article of manufacture having its conductive component outermost comprising a polymeric substrate, a first layer of material of high refractive index (TiO_2) deposited on the substrate, a first layer of material of low refractive index (SiO_2) deposited on said first layer of material of high refractive index, a second layer of material of high refractive index (TiO_2) deposited on said first layer of material of low refractive index, a second layer of material of low refractive index (SiO_2) deposited on said second layer of material of high refractive index, and a layer of conductive material (ITO) overlying said second layer of material of low refractive index, said conductive layer being outermost for direct electrical contact, said material of high refractive index having an index of refraction equal to or greater than the index of refraction of said substrate, and said material of low refractive index having an index of refraction less than the index of refraction of said

material of high refractive index, said layers of materials of high and low refractive index substantially optically matching the refractive indices of said layer of conductive material and said substrate and minimizing reflection of the article over the visible light spectrum (see entire document including column 3, lines 9-32).

Nakanishi deposits an adhesive layer between the first layer of material of high refractive index and the polymeric substrate to improve poor adhesion (column 3, lines 9-32), but Nakanishi does not mention depositing the first layer of material of high refractive index directly onto the polymeric substrate. Nakanishi does disclose that an ITO layer (high refractive index) may be deposited directly on a polymeric substrate although the ITO layer adheres poorly to the polymeric substrate (paragraph bridging columns 1 and 2). Although Nakanishi acknowledges this poor adhesion, Nakanishi still deposits an ITO layer (18) in direct contact with a polymeric substrate (17) (column 3, lines 33-40 and Figure 1). As demonstrated by Nakanishi, a strong bond between a high refractive index layer and a polymeric substrate is preferable, but a strong bond is clearly not essential to the invention. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to eliminate the adhesive layer of Nakanishi, because production costs would decrease at the expense of increased adhesion, which is preferable for some applications.

Regarding claim 8, Nakanishi discloses that the conductive article may be used with its conductive layer exposed to air (see Figures).

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,590,622 to Nakanishi as applied to claims 1-3 and 6-8 above, and further in view of USPN 5,694,240 to Sternbergh.

Nakanishi does not mention the specific thicknesses of the high and low refractive index layers, but Sternbergh discloses that for a composite layer comprising a stack of alternating layers of materials of high and low refractive indices, standard computer models can be used to determine optimum film thicknesses to effect anti-reflection and UV blocking (column 4, lines 30-36). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thicknesses of the alternating high and low refractive index layers, because it is understood by one of ordinary skill in the art that standard computer models can be used to determine optimum film thicknesses to effect anti-reflection and UV blocking.

Nakanishi does not mention the thickness of the ITO layer, but it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thickness of the ITO layer, such as to about 20 nm (surface resistivity in the order of about 400 ohms per square), because it is understood by one of ordinary skill in the art that the layer thickness determines the conductivity of the layer while different conductivities are required for different applications, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding the claimed reflectance of less than 10%, considering the substantially identical article taught by the prior art, compared to the currently claimed article, it appears that the article taught by the prior art possesses a reflectance of less than 10% over a broad region of the visible light spectrum.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or

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substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

5. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,432,225 to Rock in view of Applicant's Disclosure.

Regarding claims 1-3 and 6-8, Rock discloses an article of manufacture comprising a polymeric substrate, a first layer of material of high refractive index (TiO_2) deposited directly on the substrate, a first layer of material of low refractive index (SiO_2) deposited on said first layer of material of high refractive index, a second layer of material of high refractive index (TiO_2) deposited on said first layer of material of low refractive index, a second layer of material of low refractive index (SiO_2) deposited on said second layer of material of high refractive index, said material of high refractive index having an index of refraction equal to or greater than the index of refraction of said substrate, and said material of low refractive index having an index of refraction less than the index of refraction of said material of high refractive index (see entire document including column 3, line 13 through column 4, line 24, and the paragraph bridging columns 6 and 7).

Rock does not mention an outer layer of conductive material, but the applicant discloses that a layer of a transparent conductive oxide (TCO), such as ITO, may be applied to a polymeric substrate composite for use as electrical conductors in a variety of electronic devices (see pages 1-2). It would have been obvious to one having ordinary skill in the art at the time the invention

was made to apply an outer layer of TCO, such as ITO, to the article disclosed by Rock, as taught by applicant's disclosure, because the resulting article could be used as an electrical conductor in a variety of electronic devices and because the applicant discloses that reflected color is a problem with current film construction (see page 2, lines 13-21) while Rock discloses that the antireflection coating is colorless (paragraph bridging columns 2 and 3).

Regarding claim 8, the applicant discloses that the TCO layer is to be exposed to air (see page 1).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,432,225 to Rock in view of Applicant's Disclosure as applied to claims 1-3 and 6-8 above, and further in view of USPN 5,694,240 to Sternbergh.

Sternbergh discloses that for a composite layer comprising a stack of alternating layers of materials of high and low refractive indices, standard computer models can be used to determine optimum film thicknesses to effect anti-reflection and UV blocking (column 4, lines 30-36). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thicknesses of the alternating high and low refractive index layers, because it is understood by one of ordinary skill in the art that standard computer models can be used to determine optimum film thicknesses to effect anti-reflection and UV blocking.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the thickness of the ITO layer, such as to about 20 nm (surface resistivity in the order of about 400 ohms per square), because it is understood by one of ordinary skill in the art that the layer thickness determines the conductivity of the layer while different

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conductivities are required for different applications, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding the claimed reflectance of less than 10%, considering the substantially identical article taught by the prior art, compared to the currently claimed article, it appears that the article taught by the prior art possesses a reflectance of less than 10% over a broad region of the visible light spectrum.

Response to Arguments

7. Applicant's arguments filed 6/11/2004 have been fully considered but they are not persuasive.

The applicant asserts that the adhesion layer of Nakanishi is critical to the invention. The examiner respectfully disagrees. Nakanishi deposits an adhesive layer between the first layer of material of high refractive index and the polymeric substrate to improve poor adhesion (column 3, lines 9-32), but Nakanishi does not mention depositing the first layer of material of high refractive index directly onto the polymeric substrate. Nakanishi does disclose that an ITO layer (high refractive index) may be deposited directly on a polymeric substrate although the ITO layer adheres poorly to the polymeric substrate (paragraph bridging columns 1 and 2). Although Nakanishi acknowledges this poor adhesion, Nakanishi still deposits an ITO layer (18) in direct contact with a polymeric substrate (17) (column 3, lines 33-40 and Figure 1). As demonstrated by Nakanishi, a strong bond between a high refractive index layer and a polymeric substrate is preferable, but a strong bond is clearly not essential to the invention. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to

eliminate the adhesive layer of Nakanishi, because production costs would decrease at the expense of increased adhesion, which is preferable for some applications.

The applicant asserts that depositing the first high refractive index layer directly onto the substrate improves the optical quality of the article and simplifies the optical matching of the refractive indices. The applicant appears to be claiming unexpected results, but the specification fails to teach or suggest that the direct contact between the first high refractive index layer and the polymeric substrate is directly responsible for any such unexpected results.

The applicant asserts that Nakanishi does not teach or suggest that the layers of materials of high and low refractive indices substantially optically match the refractive indices of the layer of the conductive material and the substrate. The examiner respectfully disagrees. Applicant's specification teaches the use of SiO₂ for the low refractive index material, TiO₂ for the high refractive index material, ITO for the conductive material, and a polymer as the substrate. Nakanishi also discloses the use of SiO₂ for the low refractive index material, TiO₂ for the high refractive index material, ITO for the conductive material, and a polymer as the substrate. Considering the identical or substantially identical materials taught by Nakanishi, compared to the materials taught by the current applicant, it appears that Nakanishi inherently describes that the layers of materials of high and low refractive indices substantially optically match the refractive indices of the layer of the conductive material and the substrate.

The Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on

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inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

atp

 6/30/04
ANDREW T. PIZIALI
PATENT EXAMINER


TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700